

11/22

STATINTL

[REDACTED]

Sorry I do not have more formal and complete comments. One of our people, [REDACTED], made the attached pencil comments for me and I send them along verbatim - in the main, I go along with him.

As you know, we have our own design objectives prepared for next year and some of the question marks we hope to answer by working with your [REDACTED] M.I.C., which could also be used to

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test the feasibility of some of the other applications mentioned in the back of this proposal. STATINTL

[REDACTED] contention that complicated electronic registration equipment is not necessary - is intriguing - we have thought differently. If he ~~is~~ is right, there might well be a use for some desk-top units like this.

I assume he is proposing a sequential exposure operation with

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partial exposure with each successive chip — relative to a master. Off so — he does not give an indication of how this is going to be accomplished mechanically. In general, we are attracted to the sequential operation because of the saving of space; however, we are ^{STATINTL} ~~up~~ ~~sure~~ if the theory is even right. If  is not proposing sequential ~~exposure~~ exposure, I don't see much value in the device. I believe considerably more than a two-exposure integration is necessary to sufficiently improve a given photo.

Further, I think that some amount of "tilt" adjustment is necessary to ~~perform~~ test the feasibility of integrating similar scenes with slightly different aspect angles and, therefore, to make practical the further development of such a device beyond the prototype stage.

I'll be in N.Y. this week but will be in touch with you when I return.

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Grain Noise Limitations (Page 3)

"Since grain sizes are typically .1 micron in ordinary films,"

Grain measurements in several types of B&W aerial photography indicate that our film is much grosser than this — in fact at [REDACTED] imagery is obscured in most cases.

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Equipment Implications (Page 4)

"At $\frac{1}{3}$ medium contrasts the improvement possible falls off to $\sqrt{N}$ and eventually falls to Zero"

Theoretical conclusion have some drastic implications concerning an optimum

1. Expense, special optics are not required
2. High precision multiple stages are not required
3. Electronic alignment is not required."

This is not the same problem. In the case of $\sqrt{N}$ it is true but items 1, 2, 3 is not inconsistent unless N is much greater than 1

Optical Systems (page 4)

"Commercially available optics are more than adequate. If magnification range in one channel is desired it can be accomplished with a commercial Zoom Lens."

This is true — considering 2 systems —; but matching of 4 lens systems becomes more important.

Alignment Systems (page 4)

"... electronic alignment techniques show promise of achieving greater accuracy ... than the human eye ... One never visually aligns on the extreme low contrast or high line number regions of a photograph."

A lot of this depends on the camera's lens distortion and subjects location on film relative to each other — as a ship at sea may give very little on which to align.

Film Plate (page 7)

"The film chip platens handle a maximum of [REDACTED] we were talking about including [REDACTED] more [REDACTED]"

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Optical System (Page 9)

"The system will operate with a matched field magnification of [REDACTED] in each channel"

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I doubt the size (70/mm [REDACTED]) considering this magnification. Moreover this would make our grain visible to a point of obscuring image alignment.

Light Source (Page 9)

"300 Watt tungsten source ..."
Sounds like a film fire.

Optical Superposition (Page 9)

"... of the two channels ..."
Our design was set on 4 channels.

Scope (page 13)

"... Resolution of system at least 4 lines/mm AWAAR on the screen"
Don't understand AWAAR — what Resolution can be expected on the film record.